

What is claimed is:

1. A wafer grinder, comprising:

a housing module, having a holding body and fixedly positioned on the wafer grinder;

5 a rotary worktable module, having a worktable body and a spindle rotatably positioned on the wafer grinder, wherein the rotary worktable module has a wafer holding sub-module;

an air pressure spindle module, positioned on the holding body and having an air channel to direct an airflow with a certain pressure to the housing module and the rotary worktable module to act as an air cushion spindle to support the worktable body and the spindle; and

10 an adjustment module, positioned on the holding body and having a piezoelectric actuator and a displacement meter;

wherein a longitudinal rotation between the spindle and the worktable body has an air padding to offset a lateral force during a grinding process.

2. The wafer grinder as claimed in claim 1, wherein the holding body has an auxiliary groove to facilitate machining an airflow hose,

20

3. The wafer grinder as claimed in claim 1, wherein a base structure of the

wafer grinder is a conventional civil structure for setting up a machine.

4. The wafer grinder as claimed in claim 2, wherein the wafer holding sub-module is positioned on the rotary worktable module and has a vacuum nozzle and a pump hose.

5. The wafer grinder as claimed in claim 1, wherein the spindle is connected to the worktable body to rotate the worktable body.

6. The wafer grinder as claimed in claim 4, wherein the rotary worktable module further includes an adjustment sub-module positioned within the worktable body, and the adjustment sub-module includes an adjusting screw to block longitudinally the vacuum nozzle to adjust to wafers with different sizes.

7. The wafer grinder as claimed in claim 1, wherein the displacement meter and the piezoelectric actuator are placed in a same geometrical position.

8. The wafer grinder as claimed in claim 7, wherein three pairs of piezoelectric actuator and displacement meter are positioned at a

bottom of the worktable body by a same separation to adjust a tilt angle
of the worktable body.

9. The wafer grinder as claimed in claim 1, wherein the spindle is driven
5 by a flexible, belt-like structure to prevent shock from being
transmitted to the spindle.

10. The wafer grinder as claimed in claim 9, wherein the spindle further
includes a coupling and a timing plate belt pulley so that the coupling
10 connects with the timing plate belt pulley and motor power is delivered
by timing plate belt pulley.

11. The wafer grinder as claimed in claim 1, wherein the disc spring
generates a pre-compressive force on the piezoelectric actuator.

15